The sad story of Alaotra Grebe
Tachybaptus rufolavatus

Frank Hawkins, Rado Andriamasimanana, Sam The Seing and Zarine Rabeony

Le Grèbe de Delacour *Tachybaptus rufolavatus*, espèce endémique du centre-est de Madagascar, semble toujours avoir été peu commun. Les données disponibles, relativement peu abondantes, semblent indiquer qu'il est devenu nettement plus rare au début des années 1980 et est maintenant quasi-certainement éteint, et cela peut-être depuis une décennie. Lors d'inventaires ornithologiques effectués de fin-avril à mi-mai 1999, l'espèce n'a pu être localisée. Un certain nombre de causes pour son déclin sont avancées. La dégradation des zones humides du Lac Alaotra, due à l'utilisation excessive de pesticides, parallèlement à l'introduction quasi-simultanée, dans les années 1980, de filets maillants et du poisson prédateur *Ophicephalus striatus* ont probablement sonné le glas pour l'espèce.

Alaotra (Madagascar Red-necked) Grebe *Tachybaptus rufolavatus* was described in 1932[1] from specimens collected by the Mission Franco-Anglo Américaine[3], at Lake Alaotra in central-east Madagascar. It was a small grebe, similar to the African subspecies of Little Grebe *T. ruficollis capensis*, but differing from it and Madagascar Little Grebe *T. pelzelnii*, by its pale eye, pale rufous-washed neck, dark underparts and short wings[2]. Alaotra Grebe had a long and strong bill compared to Little Grebe, suggesting that it specialised on small fish. The only known photograph of the species, taken in 1985, appears here as Fig 1.

Lake Alaotra is the largest lake in Madagascar, c40 km long and 10 km wide, with c350 km² of marshes, (mostly *Cyperus* spp) and c500 km² of ricefields at its southern end, and c220 km² of open water. It is situated in a basin at c750 m, between two north–south scarps[3]. The lake is also famous for Madagascar Pochard *Aythya innotata*, which also appears to have been practically endemic to the lake and its environs, and may now be extinct, the last individual having been recorded in 1991[5].

Alaotra Little Grebe was only ever reliably recorded on Lake Alaotra; reports from elsewhere[6,7] appear to be in error for *T. pelzelnii*[5]. The species' short wings seem likely to have limited its distribution to the immediate vicinity of the lake, as it would probably have been able to fly only short distances[9] (A Konter pers comm). Early accounts of grebes at Lake Alaotra mention it being relatively common, at least around the time of its original discovery[1], while Little Grebe seems not to have been common on the lake at that time[1].

Decline

Published reports from Lake Alaotra between the 1930s and 1980s are rare and only Voous & Payne[11] mention the species composition of grebe flocks on the lake. They report that, in 1960, 'around 50 [Alaotra Grebes]', with c10 Madagascar Little Grebes were present; Little Grebe was considered the commonest grebe at the lake. By 1982, while grebe flocks were still relatively common, Alaotra Little Grebe appeared scarce, with c12 being identified, as well as several hybrids[5]. By 1985, although c100 grebes were present on the lake, only 2–3 definite Alaotra Little Grebes were identified[10] (P Thompson pers comm). In 1986, B Dawson (unpublished report held at BirdLife International) recorded c8 adult and immature Little Grebes, and one adult and one immature Alaotra Grebe. Two years later D Thorns (unpublished report held at BirdLife International) saw an adult and an immature grebe that were also probably the latter species. Subsequently, in 1989–90, Wilmé[13] and Young & Smith[14] reported Madagascar Little Grebes and Little Grebes, but no definite Alaotra Grebes. Between January 1993 and January 1994, Pidgeon[4] saw only one each of Madagascar Little Grebe and Little Grebe. He also recorded the two commoner species at three lakes near Andilamena, north-east of Alaotra; two unidentified grebes and eight Little Grebes at Lake Antsomangana, four of each species at Maromandia, and two Madagascar Little Grebes at Lake Amparihalava. In addition, he found two of each of both common grebes on the River Ivondro, near Didy Marsh. Surveys conducted at Lake Alaotra by Julien Ramanampamonjy[5,6], on behalf of Durrell Wildlife Conservation Trust and Wetlands International, produced two Madagascar Little Grebe in 1997, one Madagascar Little Grebe in 1998, and no grebes in 1999.

In early 1999, this situation prompted Projet ZICOMA to propose a survey of sites around Lake Alaotra in order to try and find Alaotra Grebe. Funding was obtained from the African Bird Club Conservation

Fund (with complementary financing from AviFauna), and 30 April–17 May was spent visiting sites around Lake Alaotra[15]. Seven areas around the main lake, lakes within a few kilometres of Lake Alaotra near Amparafaravola and Imerimandroso, and those visited by Pidgeon in 1993 near Andilamena were surveyed. The only site which held any grebes was Lake Antsomanagana near Andilamena, where four Madagascar Little Grebes were seen. Other lakes near Andilamena, which had held grebes in 1993, were almost dry and held few waterfowl[15].

Discussion

The striking result of this analysis is the precipitous decline of grebes in general at the main lake since c1985. It suggests that a new pressure, manifest from the early 1980s, was responsible for the elimination of all resident grebes from the main lake by 1992, and that all subsequent sightings relate to birds that have arrived from other areas, only to be very rapidly eliminated before they could breed. It appears that this pressure is absent, or at least a lot lower, at Lake Antsomangana. In addition, the pressures appear to have selectively targeted grebes, as other species (eg Meller's Duck *Anas melleri*, Hottentot Teal *Anas hottentota* and Red-billed Teal *Anas erythrorhyncha*, while in decline since the 1930s, are still relatively numerous[5,6]).

Several potential causes of the decline have been suggested. There is considerable evidence to suggest that some hybridisation between Little Grebe and Alaotra Grebe occurred, and that even the type was a hybrid. This has been mentioned as a potential reason for the extinction of the species. The extent to which hybridisation can explain the species' decline is impossible to judge, but it appears that until the final sighting, individuals possessing the majority of characters of Alaotra Grebe were present, and that the decline of that species was accompanied, on Lake Alaotra at least, by an equal decline in other grebe species. The introduction of predatory fish (especially Black Bass *Micropterus salmoides*) may have impacted substantially upon potential grebe food[4]. Exotic vegetarian fish, especially carp *Cyprinus* sp. and some *Tilapia* species have radically changed the vegetation of the lake since the 1930s, when the majority of open water was covered in water lilies *Nymphaea* sp.[15]. Organochlorine pesticides, frequently used in ricefields surrounding the lake since the 1960s, have probably been mounting in the Lake Alaotra ecosystem. Many products now banned in the West are in common use at Alaotra. Hunting of waterfowl, already intensive in the 1930s[15] appears to be very high at present[4]. However, it is principally concentrated on duck species that fly between the lake and ricefields at night[4,5].

These pressures have certainly contributed to the overall decline in bird populations at Lake Alaotra, but they do not appear to have radically increased in the 1980s, and changes in wetland vegetation and hunting, at least, would appear likely to have affected all species of waterfowl. Hunting may have played a part in the decline of Madagascar Pochard[4], which was reported by local people to be tame and easily caught, but the small grebes do not appear to be have been specifically hunted. Two pressures, which do appear to have increased markedly in the relevant time period, are the use of monofilament gill nets and predation pressure from the introduced Snakehead *Ophicephalus striatus* (Channidae), a predatory fish of pike *Esox* sp.-like in size and habits. No data are available on the rates of gill-net use prior to the early 1990s, but at this time they were so widespread in the lake's open water as to impede the progress of boats with outboard motors (H G Young pers comm). These nets undoubtedly catch grebes, as diving birds do not see them underwater and drown if ensnared. Widespread use of gill-nets is not apparent on Lake Antsomangana.

Snakeheads were introduced to Madagascar in the late 1970s and probably reached Lake Alaotra in the early 1980s[4]. This genus of fish, along with others, has been implicated in the elimination of grebes from waters in their native south-east Asia (J Fjeldså pers comm). A similar situation exists in Europe, where Little Grebes do not breed successfully in waters inhabited by large pike, as the fish eat adults and chicks. At Lake Alaotra, local fishermen relate many tales of adult grebes being found dead on the surface of the water with fatal injuries, which they attribute to Snakeheads. According to fishermen, the fish attack grebes when underwater, and Snakeheads are reputedly absent or very rare in Lake Antsomangana.

Conclusion

It appears undeniable that Alaotra Grebe is extinct. Despite repeated intensive searches, there have been no records for over ten years and it appears that all resident grebes have now been eliminated from Lake Alaotra. The near-flightless nature of Alaotra Grebe makes it extremely unlikely that populations remain undiscovered elsewhere in Madagascar. A series of effects have apparently contributed to the degradation of wetland habitats at Lake Alaotra, including indiscriminate pesticide use, hunting and competition from native fish, but that the final devastating blow to this species, as well as probably for the equally unfortunate Madagascar Pochard, was the near-simultaneous introduction of monofilament gill nets

Figure 1. Adult breeding plumaged Alaotra Grebe *Tachybaptus rufolavatus*, Andreba, Lake Alaotra, 1985 (Paul Thompson)

and the Snakehead. Fig 1 thus stands, apart from museum specimens, as the last testament of this species, which appears to have become extinct in c1988–89, without the conservation world noticing.

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